

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (currently amended): A method for making three-dimensional structures of nanometric or micrometric dimensions, ~~in particular of surfaces from which there rise~~wherein the three-dimensional structures are surface projections having a height of up to 500 microns arranged according to definite and having defined geometries, wherein it the method comprises the following steps:

- ~~-(a) obtaining of a photopolymeric or UV photopolymerizable mixture including~~
nanoparticles orientable in space;
- ~~-(b) deposition of a layer of the mixture on a respective substrate to form a layer;~~
- ~~-(c) exposure of the layer to UV-radiation and control of the polymerization by means of~~
variation of the index of refraction of the layer;
- ~~-(d) application of a magnetic and/or electrical field to the layer capable of producing to~~
produce a desired orientation or positioning of the nanoparticles ~~in order and~~ to induce the growth of surface projections from the layer; and

(e) polymerization of the mixture,
wherein the nanometric dimensions are dimensions from about 50 nm to 1 μ m, and the micrometric dimensions are dimensions from about 50 μ m to about 500 μ m.

2. (currently amended): The method according to Claim 1, ~~in which~~ wherein the exposure of the layer to UV-radiation is concomitant with the application of the magnetic and/or electrical field.

3. (currently amended): The method according to Claim 1, ~~in which~~ wherein the exposure of the layer of the mixture to UV-radiation and the application of the magnetic and/or electrical field occur in ~~inert~~ an oxygen-free environment, ~~i.e., without oxygen.~~

4. (currently amended): The method according to Claim 1, ~~in which~~ wherein the UV radiation is localized in the areas in which the surface projections ~~must~~ are to be made formed.

5. (currently amended): The method according to Claim 4, ~~in which~~ wherein the UV radiation is localized by means of a binary mask or a half-tone mask.

6. (currently amended): The method according to Claim 1, ~~in which~~ wherein the layer is exposed to non-uniform UV radiation, with a consequent non-uniformity in the formation of ~~the~~ polymeric lattice between areas of the layer most illuminated by UV radiation and areas of the layer least illuminated by UV radiation.

7. (currently amended): The method according to Claim 6, ~~in which there envisaged~~ wherein the control of polymerization is carried out by detection of the variation of the index

refraction of the layer in the areas with different degrees of cross-linking and the consequent modification of the intensity of the magnetic or electrical field.

8. (currently amended): The method according to Claim 1, wherein the exposure of the layer (M) to UV-radiation is envisaged for obtaining a pre-polymerization of the mixture, i.e., a transformation of said transforms the mixture from a liquid state to a gelatinous state.

9. (currently amended): The method, according to Claim 8, wherein ~~there is~~ envisaged the application of a magnetic and/or electrical field is carried out by application of a localized magnetic field by means of a magnetic tip ~~positionable according to a number of axes adjacent to the layer of mixture.~~

10. (currently amended): The method according to Claim 9, ~~in which~~ wherein the tip has a nanometric dimensions, is made of silicon, and is coated with a magnetic film, wherein the nanometric dimension is a dimension of 20-30 nm.

11. (currently amended): The method according to Claim 1, ~~in which~~ wherein the polymerization of the mixture is ~~obtained~~ carried out by means of exposure thereof to UV radiation in the absence of application of the magnetic and/or electrical field.

12. (currently amended): The method according to Claim 11, ~~in which~~ wherein the polymerization of the mixture is ~~obtained~~ carried out by means of localized exposure of the projections to UV radiation in the absence of the magnetic and/or electrical field.

13. (currently amended): The method according to Claim 9, ~~in which there are provided means for~~ wherein the polymerization of the mixture is carried out by focusing a beam of UV radiation in the proximity of the tip ~~in order to enable cross-linking of a~~ the projections ~~previously formed by the tip itself.~~

14. (currently amended): The method according to Claim 1, ~~in which~~ wherein the is ~~of photopolymeric or UV~~ photopolymerizable mixture comprises acrylated oligomers and monomers.

15. (currently amended): The method according to Claim 1, ~~in which~~ wherein the orientable nanoparticles are selected ~~in from~~ the group consisting of ferrofluids, electro-rheological materials, liquid crystals and magneto-rheological materials.

16. (withdrawn): A solid component having three-dimensional surface structures of nanometric or micrometric dimensions, in particular having one or more surfaces in which there are defined projections having a height of up to 500 micron arranged according to definite geometries, obtained in accordance with the method according to claim 1.

17. (withdrawn): A solid component having at least one surface from which there rise projections having a height of up to 500 micron arranged according to definite geometries, wherein it is at least in part made using a photopolymer to which are added nanoparticles orientable in space by means of magnetic and/or electrical fields, the concentration of orientable nanoparticles being greater at the projections.

18. (withdrawn): The component according to Claim 17, in which the photopolymer has a base of oligomers and monomers.

19. (withdrawn): The component according to Claim 17, in which the orientable nanoparticles are selected in the group consisting of ferrofluids, electro-rheological materials, liquid crystals and magneto-rheological materials.

20. (withdrawn): An apparatus for the implementation of the method according to Claim 1.

21. (withdrawn): The apparatus according to Claim 20, comprising:
a support for deposition of a layer of a photopolymeric or UV mixture including nanoparticles orientable in space;
- means for exposing the layer to UV-radiation;

means for controlling the polymerization of the mixture by means of variation of its index of refraction;

- means for applying a magnetic and/or electrical field capable of producing a desired orientation or positioning of the nanoparticles of the mixture in order to induce the growth of surface projections from the layer; and

- means for carrying out polymerization of the mixture.